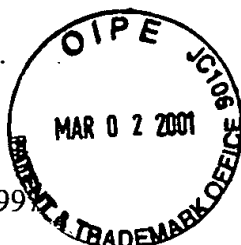


#26/Reply  
Brief  
3/15/01  
APJ

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Rengarajan et al.



Examiner: Tran, T.

Serial No: 09/000,626

Group Art Unit: 2811

Filed: December 30, 1999

Docket: 97 P 7971 US 02 (8055-42)

For:

RECESSED SHALLOW TRENCH ISOLATION STRUCTURE  
NITRIDE LINER AND METHOD OF MAKING SAME

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Assistant Commissioner for Patents  
Washington, D.C. 20231

**REPLY BRIEF**

In Response to the Examiner's Answer dated January 29, 2001, which interposes new issues, appellants respectfully submit the following reply.

**CERTIFICATE OF MAILING 37 C.F.R. §1.8(a)**

I hereby certify that this correspondence (and any document referred to as being attached or enclosed) is being deposited with the United States Postal Service as first class mail, postage paid in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on February 28, 2001.

Dated: 2/28/01

James J. Bitetto

## **I. Summary of the Invention**

The Examiner asserts the Summary of the Invention is deficient as presented in the appellant's brief because it employs the language of "just below" a transistor channel depth. The applicant disagrees with the Examiner's statement in that "just below" is included in the presently submitted claims and therefore summarizes the claims as presented in the Appeal. Appellants are unaware that even as characterized by the Examiner the Summary of Invention, as presented in the appellant's brief, can in any way be considered deficient. The Summary of the Invention properly summarizes the current claims as presented to the Board in the Appendix of the appellant brief.

## **II. Response to Arguments**

### **A. The §112, first paragraph rejection**

The Examiner's response to appellant's argument stated that there is no evidence of record to show that the problem of hot carrier effects are trapped by nitride liners. The Examiner also states that no comparative examples are present in the present specification showing a difference between the prior art and the present invention. The Examiner further states that no data is presented to show any relationship between the specific heights of a nitride liner and hot carry trapping. The appellant strongly disagrees.

The appellant's respectfully submit that there is evidence in the record to show that the problem of hot carrier effects are trapped by nitride liners, as set forth, e.g., at page 6, lines 18-24 of the present specification. In addition, the specification of the present invention sets forth that the nitride liner be recessed to a depth below the channel depth ( $D_c$ ) (see e.g., page 7, lines 21-29 of the present specification) of an adjacent transistor.

The Examiner raises an issue that comparative examples and test data are not presented in the specification believing that this bolsters the Examiner's contention that there is no literal support in the specification to support the "just below" language of the claims. The appellant believes that this reasoning is flawed. While the specification does not present specific experimental data, the specification sets forth the problems with the prior art and the best mode of the present invention. The appellant is unaware of any requirement that the specification must set forth comparative examples or actual data. In fact, there is no statutory requirement for the disclosure of a specific example. A patent specification is not intended to be a production specification. *Spectra-Physics, Inc. v. Coherent Inc.*, 827 F. 2d 1524, 1536, 3 USPQ 2d 1737, 1745 (Fed. Cir. 1987). Working examples correspond to work actually performed and may describe tests which have actually been conducted and the results that were achieved. (See e.g., MPEP 608.01(p)).

The Examiner contends that based on the specification one skilled in the art would not be able to understand the difference between "below" and "just below." As stated previously, "just below" is fully supported by the specification and is a subset of "below". One skilled in the art would clearly understand that the inventor had possession of the invention based on the specification. In fact, even those not skilled in the art using common sense based on the specification would understand the this meaning. It is clear from the specification that the nitride liner be recessed below or just below the channel depth (Dc), as claimed. Therefore, a section §112, first paragraph rejection is not supported.

## B. The Obvious Rejection

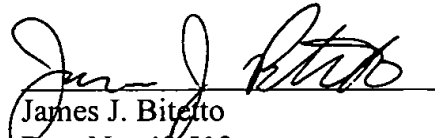
The Examiner states at page 9, lines 4-5 of the second paragraph of paper 25 (the Answer) that "it does not appear to be any evidence of record to show that this problem [hot carrier effects due to a nitride line] actually occurs " (brackets added), yet the Examiner contends that recessing the nitride liner to "just below" a channel depth ( $D_c$ ) of a transistor is obvious. It is to be noted that the references taken as a whole or individually do not recognize the hot carrier effect problem as set forth in the present disclosure. Furthermore, the references, taken as a whole, fail to disclose or suggest, *inter alia*, an uppermost surface of said nitride liner being disposed just below a transistor channel depth,  $D_c$ , of a transistor disposed in a well beside said shallow trench isolation structure, the recessed nitride liner being dimensioned and configured to prevent hot carrier effects due to charge trapping for charge which traverses a channel of the transistor, as set forth in claims 1 (and 24). The cited references fail to disclose or suggest any relative position between a transistor channel and a nitride liner. It is only through the present disclosure that one skilled in the art learns of the placement of an uppermost surface of a nitride liner relative to a transistor channel to avoid hot carrier effects. It is unclear why the Examiners questions (at page 9 second paragraph of the Answer) whether the hot carrier problems even exist and then states that such a solution is obvious.

The Examiner further stated that the appellant's arguments individually attacked the references and that one cannot show obviousness by attacking references individually. The appellant respectfully submits that the references were addressed as a combination and that the references were individually referred to demonstrate that weaknesses of the combination and the rejection as a whole. Accordingly, the obvious rejection should be reversed.

### **III. Conclusion**

For all of the reasons presented herein and in appellant's brief filed November 2, 2000, appellants respectfully submit the Examiner's rejections under 35 U.S.C. §112 first paragraph and §103 are incorrect. Accordingly, it is respectfully requested that the Board reverse the rejection of claims 1-5, 7, 24 and 25 under 35 U.S.C. §103 and allow the case.

Respectfully submitted



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